CHAPTER – 11

ALGEBRA

- **Algebra**: A generalization of arithmetic in which letters representing numbers are combined according to the rules of arithmetic.

- We looked at patterns of making letters and other shapes using matchsticks. We learnt how to write the general relation between the number of matchsticks required for repeating a given shape. The number of times a given shape is repeated varies; it takes on values 1,2,3,... . It is a variable, denoted by some letter like n.

- A variable takes on different values, its value is not fixed. The length of a square can have any value. It is a variable. But the number of angles of a triangle has a fixed value 3. It is not a variable.

- We may use any letter n, l, m, p, x, y, z, etc. to show a variable.

- A variable allows us to express relations in any practical situation.

- Variables are numbers, although their value is not fixed. We can do the operations of addition, subtraction, multiplication and division on them just as in the case of fixed numbers. Using different operations we can form expressions with variables like x – 3, x + 3, 2n, 5m, 3 p , 2y + 3, 3l – 5, etc.

- Variables allow us to express many common rules in both geometry and arithmetic in a general way. For example, the rule that the sum of two numbers remains the same if the order in which the numbers are taken is reversed can be expressed as a + b = b + a. Here, the variables a and b stand for any number, 1, 32, 1000 – 7, – 20, etc.

- An equation is a condition on a variable. It is expressed by saying that an expression with a variable is equal to a fixed number, e.g. x – 3 = 10.

- An equation has two sides, LHS and RHS, between them is the equal (=) sign.

- **Solution of an Equation:** The value of the variable in an equation which satisfies the equation.

- For getting the solution of an equation, one method is the trial and error method. In this method, we give some value to the variable and check whether it satisfies the equation. We go on giving this way different values to the variable until we find the right which satisfies the equation.

- The LHS of an equation is equal to its RHS only for a definite value of the variable in the equation. We say that this definite value of the variable satisfies the equation. This value itself is called the solution of the equation.
- For getting the solution of an equation, one method is the trial and error method. In this method, we give some value to the variable and check whether it satisfies the equation. We go on giving this way different values to the variable` until we find the right value which satisfies the equation.